REMARKS

The Office Action dated January 26, 2004 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 5, 12, 13 and 20 have been amended to more particularly point out and distinctly claim the instant invention. No new matter has been entered. Claims 1-23 are pending in the present application and are again submitted for consideration.

In the Office Action, claims 1-4 and 13-19 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the instant invention. It was alleged that in the recitation of satisfying requirements in claims 1 and 13, it was not clear what entity satifies the requirement. Applicants have amended claims 1 and 13 to make it clear that the decision is made "when the port satisfies" those requirements. Applicants respectfully assert that claims 1-4 and 13-19 are now definite under 35 U.S.C. §112, second paragraph, and Applicants respectfully request reconsideration and withdrawal of the above rejection.

Additionally, claims 1-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chiussi et al.* (U.S. Patent No. 5,701,292) in view of *Hatono et al.* (U.S. Patent No. 5,914,936) and *Ikeda* (U.S. Patent No. 5,719,853). The Office Action took the position that *Chiussi et al.* disclosed all of the elements of the claimed invention, with the exception of "disabling the data flow and re-enabling the data flow upon satisfying a spatial requirement and a temporal requirement." *Hatono et al.* and *Ikeda*

were cited as curing the deficiencies in *Chiussi et al.*, and the Office Action took the position that it would have been obvious to a person of ordinary skill in the art to combine *Chiussi et al.*, *Hatono et al.* and *Ikeda* to yield the claimed invention. Applicants respectfully submit that the presently pending claims recite subject matter which is neither disclosed nor suggested in the cited prior art.

Claim 1, from which claims 2-4 depend, recites a method for controlling data flow inside a network switch. The method includes determining if a quantity of queued data for a port, of a plurality of ports of the network switch, has exceeded a first predetermined threshold, disabling a data flow to the port from other ports of the plurality of ports if the quantity of queued data is determined to have exceeded the first predetermined threshold and re-enabling the data flow to the port from the other ports of the plurality of ports when the port satisfies a predetermined spatial requirement and a predetermined temporal requirement.

Claim 5, from which claims 6-11 depend, recites a method for controlling data flow in a network switch. The method includes the steps of defining a preferred operational range for a port, of a plurality of ports of the network switch, defining a quasi-congested operational range for the port, defining a congested operational range for the port, disabling a data flow to the port from other ports of the plurality of ports when the port approaches the congested operational range and re-enabling the port for receipt of data from other ports of the plurality of ports when the port reaches the preferred operational range and satisfies a predetermined temporal requirement.

Claim 12 recites a method for controlling data flow in a network switch. The method includes the steps of monitoring a quantity of data queued to be transmitted by a port of a plurality of ports of the network switch, determining if the quantity of data queued has exceeded a high water mark, disabling a data flow into a port queue from other ports of the plurality of ports if the quantity of data queued is determined to have exceeded the high water mark, determining if the quantity of data queued has fallen below a low water mark, determining if a predetermined amount of time has passed, if the quantity of data queued has fallen below the low water mark and re-enabling data flow into the queue from the other ports of the plurality of ports, if it is determined that the quantity of data has fallen below the low water mark and the predetermined amount of time has passed.

Claim 13, from which claims 14-19 depend, recites an apparatus for controlling data flow in a network switch. The apparatus includes means for determining if a quantity of queued data for a port, of a plurality of ports of the network switch, has exceeded a first predetermined threshold, means for disabling a data flow to the port from other ports of the plurality of ports if the quantity of queued data is determined to have exceeded the first predetermined threshold and means for re-enabling the data flow to the port from the other ports of the plurality of ports when the port satisfies a predetermined spatial requirement and a predetermined temporal requirement.

Claim 20, from which claims 21-23 depend, recites a network switch. The switch includes at least one data port interface connected to at least one port, in communication

with a plurality of port interfaces of the network switch, at least one queue in connection with the at least one data port interface for receiving data transmitted to the at least one data port interface from the plurality of port interfaces and a memory management unit in connection with the at least one queue. The memory management unit disables a data flow to a queue from the plurality of port interfaces when a level of data in the queue reaches a predetermined threshold, and thereafter re-enables data flow to the queue from the plurality of port interfaces when the level of data in the queue reaches a second predetermined threshold and a predetermined amount of time has passed.

As discussed in the present specification and recited in the amended claims, the present invention enables the control of data flow within a network switch. Particular benefits of the instant invention are discussed at page 101, line 7 to page 102, line 25 and the independent claims have been amended to more particularly claim the invention with an eye to those benefits. The amendments to the claims make it clear that the control of the data flows occurs in the network switch itself and is not necessarily concerned with pausing or halting of data into the switch. It is respectfully submitted that the prior art of *Chiussi et al.*, *Hatono et al.* and *Ikeda.*, when viewed alone or when combined, fails to disclose or suggest all of the elements of the presently pending claims. Therefore, the prior art fails to provide the critical and unobvious advantages discussed above.

Chiussi et al. is directed to a method and apparatus for controlling data transfer rates of data sources in ATM-based networks. The switch instructs data sources within the network to modify their data transfer rates by detecting congestion and potential

congestion, through the transmission of RM (Resource Management) cell to sources providing data to the network switch. The Office Action acknowledges that *Chiussi et al.* fails to disclose all of the elements of the claimed invention, explicitly disabling the data flow and re-enabling the data flow upon satisfying a spatial requirement and a temporal requirement. The Office also cites *Hatono et al.* and *Ikeda* as curing the deficiencies in *Chiussi et al.*

Hatono et al. is directed to an ATM exchange for performing adaptive flow control. The Office Action cites *Hatono et al.* for its alleged teaching of the use of two thresholds and the measurement of a permissible time. In *Hatono et al.*, a cell queue length in a buffer of the exchange is examined and when it is over a first threshold, a timer is started and when the cell queue length is below a second threshold, the timer is reset. Using the timer, the type of congestion, i.e. naturally recovering light congestion or heavy congestion requiring feedback, is determined.

Ikeda is directed to a congestion control method in an ATM network based on threshold values of node queue length. The Office Action cites *Ikeda* for its alleged teaching of disabling of a data flow when the queue length exceeds a threshold. This disruption in the flow is accomplished through the forwarding of a rate control cell back to the preceding nodes or the source terminals.

With respect to the present invention, Applicants note that all of the cited prior art references fail to teach or suggest "disabling a data flow to the port from the other ports of the plurality of ports." Each of *Chiussi et al.*, *Hatono et al.* and *Ikeda* are directed to

controlling the flow through some sort of "backpressure" method that reduces or halts the flow of data from sources outside the terminal or switch. In *Chiussi et al.*, it details that to counter congestion, the method includes the step of "transmitting electronic code or a resource management ("RM") cell from at least the switch" (column 2, lines 6-8). In *Hatono et al.*, it is disclosed that once heavy congestion is detected, the exchange "performs feedback control of the terminals connected thereto, or performs flow restriction by a UPC (Usage Parameter Control)" (column 4, lines 38-40). In *Ikeda,* "a rate decreasing control cell is generated and transmitted to the source terminal" when congestion is detected (column 2, lines 43-44).

In contrast, in the present invention, the control of data flow is within the network switch and no messaging is transmitted outside of the network switch to accomplish the data flow control. The instant invention is applicable to internal congestion, such as when a high capacity port, such as a Gigabit port, is a source for an egress, normal Ethernet port, where the differences in throughput can contribute to congestion at the egress port. Additionally, when multiple normal Ethernet ports supply packets to a single egress port, the egress queue for that port can fill at a much faster rate that the egress port can clear. These benefits are discussed in the present specification at page 101, lines 7-19.

Thus, in *Chiussi et al.*, *Hatono et al.* and *Ikeda*, when a congestion situation is detected, the "backpressure" methods are employed and the flow rates in external sources are reduced or halted. However, in each reference, flows from other sources can continue

and still affect the ability of the system to reduce the congestion in the queue. In part, this is due to the fact that each of the cited references is unconcerned with internal data flows. As such, Applicants respectfully assert that *Chiussi et al.*, *Hatono et al.* and *Ikeda*, taken alone or in combination, fail to teach or suggest disabling and re-enabling the data flow to the port from the other ports of the network switch, as recited in claim 1. Similar process steps of disabling and re-enabling the data flow are also recited in independent claims 5 and 12. Claim 13 recites means for disabling and re-enabling the data flow that are also neither taught nor suggested by the cited prior art. Claim 20, likewise, recites that the memory management units disables and re-enables data flow, where such a recitation is not taught or suggested by the cited prior art.

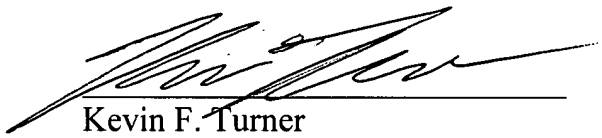
Thus, Applicants respectfully assert that independent claims 1, 5, 12, 13 and 20 are neither taught nor suggested by the disclosures of *Chiussi et al.*, *Hatono et al.* and *Ikeda*, taken alone or in combination. Applicants respectfully assert that the rejection of claims 1, 5, 12, 13 and 20 is improper and should be withdrawn.

Additionally, claims 2-4, 6-11, 14-19 and 21-23 are dependent on the independent claims discussed above and Applicants respectfully assert that those dependent claims should be allowed for at least their dependence on claims 1, 5, 13 and 20. In view of the above, Applicants respectfully submit that claims 1-23 each recite subject matter which is neither disclosed nor suggested in a combination of *Chiussi et al.*, *Hatono et al.* and *Ikeda*. It is therefore respectfully requested that all of claims 1-23 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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